

## Article Movement Device

The invention which is the subject of this application is a device for allowing the presentation of articles such as, but not necessarily exclusively, domestic goods packages such as cans, cylindrical packages and/or circular or spherical packages in particular although it is envisaged that the invention, in certain embodiments, can be used for all forms of domestic packages.

In many instances, domestic packages, once purchased from a retail outlet, are brought home to the purchaser's house and stored typically in the cupboard or a pantry. Cupboards typically include an end wall, side walls, top and bottom surfaces and an optional front door. In some instances, the front door can be substantially the same size as the side walls so as to provide a substantially cube-shaped interior storage area or in other instances, the width of the front door and end wall can be substantially less than the width of the side walls, so providing a substantially cuboid interior storage area. In all cases, it is common for at least one shelf to be provided in the storage area thereby allowing two layers of storage of articles.

In whichever embodiment, a problem which is often experienced is that while the articles which are positioned towards the front of the storage area, i.e. adjacent the front door, can be easily viewed, accessed and removed from the storage space, those articles which are placed towards the rear of the storage area cannot easily be retrieved. As a result of this, it is often the case that a number of articles need to be removed from the storage space to allow access or at least viewing of those articles which are stored towards the rear of the storage area and, upon completion of those actions, the removed articles have to be placed back into the storage area.

This causes two particular problems, the first of which is the obvious inconvenience and time wastage which occurs by having to remove articles to gain access to those articles at the rear of the storage area and which, for example, if an article is fragile, can lead to the same being broken.

A second problem is that because the articles at the rear of the storage area cannot be easily accessed, the same may not be used for a significant period of time as either the user is not aware that they are actually in the storage area and available for consumption or alternatively, the same are gradually pushed over time towards the rear of the storage area and, if perishable, may in fact go beyond their use-by date and therefore have to be discarded.

It is known to provide rack systems for storage areas such as domestic cupboards and, on said racks, the articles are placed for storage with the racks being pivotable about an axis as the cupboard door is opened. While these are effective, the same are expensive and, if not sufficiently robust then due to the weight of the articles placed thereon, are prone to break. If broken, it can mean that the entire storage area is no longer available for use.

The aim of the present invention is to provide a storage device for use in storage areas which allows articles to be stored effectively and to make efficient use of the storage area while at the same time allowing the articles to be moved within the storage area to allow access to be gained to the same.

In a first aspect of the invention there is provided an article movement device for use in a storage area, said storage area having at least one surface thereon to allow the support of said article movement device, wherein said article movement device

comprising guide means positionable in the storage area so as to define a path for movement of said articles, said guide means positioned on or supported by said at least one surface of the storage area.

In a first embodiment of the invention, the device comprises guide means in the form of elongate members which are placed on the support surface or a plurality of support surfaces in the storage area. In one embodiment, the guide means are positioned so as define a substantially oval track with the articles positionable on said track and movable therealong. In one form of the invention the elongate members are adjustable or sufficiently flexible to allow the same to be selectively positioned on the surface so as to define a suitable track width and also track shape so as to allow the user to make the most efficient use of the storage space shape.

In one embodiment, one or a number of the walls of the storage area can be used to define part of the track in accordance with the invention.

In a further embodiment the guidance means includes at least one movement means spaced apart and mounted laterally thereon at a level allowing contact with the moveable articles thereby aiding movement of the same.

Preferably the movement means includes any or any combination of wheels, bearings, cogs, rollers, and/or the like.

Preferably the movement means are interconnected along the guidance means, such that movement of one movement means leads to movement of all movement means. In this way, if a single article is located in an inaccessible location, for example at the back of the cupboard, the user can rotate the movement

means on the guide means near the front of the cupboard, thereby causing all movement means to rotate, thereby causing movement of the article in the guide means to an accessible location.

Preferably the movement means are connected to drive means such as an electric motor or a manually operated crank, such that the drive means provides the movement means with force to move articles along the track.

In a further embodiment of the invention, the device comprises preformed elongate members which define a track on which articles can be placed, and said first track can be used in conjunction with support members to allow the same to be supported and spaced from a second track and so on so as to form a plurality of article tracks in a storage area. Typically, the support members act to both position the tracks with respect to each other and also space the tracks apart so as to provide sufficient height between tracks to allow the storage of most conventional articles of a particular type such as for example foodstuff cans on a track without hindrance from a track supported above the same.

In a further embodiment of the invention, the device includes guide means in the form of one or more grooves or slots along which a series of bases are spaced, said bases provided to allow an article to be placed thereon.

In this embodiment, the bases are located in and movable along said one or more grooves or slots.

This embodiment allows articles which may themselves be of a shape not easily moved along a track, to be moved, as it is the

base on which they are placed which effectively moves along the elongate members.

In a yet further embodiment, a series of trays are mounted at spaced intervals along a guide means so as to allow the articles placed on the trays and the trays themselves to be moved between first and second vertically spaced planes. In this embodiment, the articles and tray are rotated by movement in a substantially horizontal direction along the storage area and then in a vertical direction to reach the second horizontal, vertically spaced plane for movement therealong, then returning to the first horizontal plane and so on.

In each of the embodiments, the movement of the article or the support means for the article can be by manual movement either applied directly to the article so as to push that article and/or other articles around the track defined by the guide means, or alternatively, drive means can be provided which act on either the articles directly or the support means for the articles so as to automatically move the articles around the track defined by the guide means. In each case, it is appreciated that by movement of the articles or support means for the articles, so different articles can be brought to the front of the storage area for viewing or access to remove same and therefore there is no longer a need to remove any articles from the storage area other than when the same are to be used and consumed.

Although the invention is now described with reference to the storage of articles for foodstuffs, such as cans or other cylindrical objects, it should be appreciated that the device as herein described, can be utilised for storage in many different storage areas and also in relation to other household articles or indeed industrial articles but it is believed that the invention has

particular utility with respect to storage cupboards in a domestic premises where space is particularly limited.

Specific embodiments of the invention will now be described with reference to the accompanying drawings, wherein:-

Figures 1a and b illustrate two examples of a first embodiment of the invention;

Figure 2 illustrates a second embodiment of the invention;

Figures 3a and b illustrate a third embodiment of the invention; and

Figure 4 illustrates a further embodiment of the invention.

Referring firstly to Figure 1a, there is illustrated a storage cupboard of the form in which the device has particular utility and although not shown in the other figures, it should be appreciated that in all embodiments of the invention the same can be used in a storage cupboard of this type.

The storage cupboard of Figure 1a is particularly difficult to access goods in as the front door 2 has a width which is significantly narrower than the width of the side walls 4 and 6. The end wall 8 is substantially the same width as the front door 2 and there are also provided a base 10, top 12 and shelf 14. In Figure 1a, the front door is shown open and on the bottom face there are shown a number of articles stored in a conventional manner. It will therefore be appreciated that conventionally it is difficult to gain access to the articles 16 towards the rear of the cupboard, and typically a number of articles need to be removed from the front of the cupboard, as illustrated so as to

allow access to be gained to those articles which are stored towards the rear of the cupboard storage area.

A first embodiment of the device of the invention is illustrated in position on the base of the storage area in Figure 1a and in this embodiment, the device comprises a number of elongate members which form guide means 20. In this case, the guide means are provided to form curved front and rear sections 22, 24 respectively and also the inside faces 28, 30 so that the same in combination, form a track 32 on which the articles 16 are positioned as shown in broken lines. In this embodiment, the side walls of the storage area are shown to form the outer faces of the track 32. In Figure 1b, a further example of this particular embodiment is described with the storage area shown in broken lines wherein guide means 20 are provided to define the entire track and the side walls of the storage area are not used. It is also shown how, in this case, the guide means, shown without the articles in position for ease of reference, can be manipulated to form a different shaped track 32 to suit particular storage requirements and/or shapes of storage areas.

In both embodiments, it is appreciated how the guide means are typically secured to the shelf or support surface to form the track. With the track formed and the articles positioned therein, the user, if they wish to gain access to articles towards the rear of the storage area, simply apply a movement force to one or a number of the articles on the track at the front of the storage area. Said movement causes pushing action on the articles and therefore pushes and hence moves the articles around the track, as illustrated for example, by arrow 33 in Figure 1b such that the articles originally at the rear of the track are moved towards the front and so on thus allowing access and viewing of the same. It is envisaged that the embodiment shown in Figures 1a and 1b is particularly suited to cans or

generally cylindrical objects which are fairly uniform in shape and therefore aids the movement of the same. If required, treatment can be given to the guide means to further aid the movement of articles along the guide means. For example the guide means could be coated with a dry low-friction substance.

Figure 2 illustrates a further embodiment of the invention and in this case, guide means 102 are provided to define a first track 104 and guide means 106 are provided to define a second track 108 and support means 110 are provided to vertically space the first and second tracks as shown to provide a two tier storage device where once again, articles 116 can be moved around the respective tracks to position the same at the front of the cupboard 118 to allow access to be gained at the front of the storage area as required. The support means can be provided of sufficient height to allow most conventional goods to be moved around the lower track without hitting the other track above. If required, three, four and more tiers can be added to suit particular storage requirements.

Figures 3a and b illustrate a further embodiment of the invention in which the guide means comprise a slot or series of slots 202 either formed on the shelf or surface or placed onto the surface and attached to the same. Said guide means receive locating means 206 and each of said locating means has a base 208 positioned thereon. The location means and hence bases are provided for spaced movement around the guide means and each base is provided for the reception of an article or articles thereon. It will be appreciated that in this case, the article, as it is not in direct contact with the guide means, need not be cylindrical or particularly easily movable so that for example cube or cuboid packages can be placed on the base and moved around the interior of the storage area using the device as previously described.



Figure 4 illustrates a further embodiment whereby the articles are placed in trays 402, each of said trays spaced apart around guide means 404 such that the same are movable in a first horizontal plane 406 raised or lowered at respective ends 408, 410 to move along a second horizontal plane 412 and again allows articles to be moved towards the front of the storage area for viewing and/or access.

Thus, in each embodiment, the device does not decrease the storage area available and indeed in many cases, will increase the actual storage area which is utilised. The device provides for articles which are positioned towards the rear of the storage area, to be moved either by manual application of force to the articles or the device or by powered movement, towards the front of the storage area for viewing and/or access and so on for all the articles held by the device. There is no longer a need for articles to be removed from the storage area to gain access to others and therefore the various embodiments of the invention as herein described provides significant advantage and can be retrofitted and used in existing storage areas or provided as part of new storage areas.